ASHESI UNIVERSITY

EXPLORING HERDING BEHAVIOUR OF MUTUAL FUND INVESTORS IN GHANA

Undergraduate Thesis Report submitted to the Department of Business Administration, Ashesi University in partial fulfilment of the requirement for the award of Bachelor of Science degree in Business Administration

B. Sc. Business Administration

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DECLARATION

I hereby declare that this undergraduate thesis report is the outcome of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

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Date: May 2020

I hereby declare that the preparation and presentation of this undergraduate thesis report were supervised in accordance with the guidelines on supervision of undergraduate thesis laid down by Ashesi University College.

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Date: May 2020

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ABSTRACT

According to the classical economic theory, it is assumed that human beings make rational decisions by evaluating available information and evidence before making choices which will result in maximization of utility. This theory builds on the Efficient Market Hypothesis that suggests that stock prices are a true and fair reflection of market information. However, in practicality, studies have shown that humans do not make rational decisions instead, make decisions based on some behavioural influences like herding, anchoring and known as behavioural biases. The aim of this study is to investigate the impact of herding behaviour on investment decisions of individual investors of mutual funds in Ghana. In recent history, Ghana has experienced and suffered a series of large-scale financial scam. The study collected primary data through a structured questionnaire among 70 mutual fund investors. Evidence of herding amongst mutual fund investors was tested using the chi-square test and the t-test. The results of the study show that there is the presence of herding behaviour when mutual fund investors are making investment choices. The study also concluded that gender does not influence the propensity of an investor to herd when investing. The results of this study will help investors understand how cognitive biases come to play in investor decision making.

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CHAPTER 1: INTRODUCTION

1.1. Background

According to the classical economic theory, it is assumed that human beings make rational choices by evaluating available information and evidence before making decisions which will result in maximization of utility. However, in practicality, studies have shown that humans do not always make rational decisions instead, they make decisions based on certain behavioural influences. A classic example is how behavioural biases affect people in real life is when people are looking for a restaurant or an eatery. Most people are likely to gravitate towards a restaurant with lots of customers with the assumption that higher patronage automatically equals better food. In this scenario, it is fascinating to note that people are hard-wired to herd-think since they make decisions based on the decisions of others.

Similarly, in the field of finance, people tend to be influenced by emotions and cognitive processes in investment decision making and this is precisely what behavioural finance seeks to explore. Behavioural Finance is an emerging discipline that seeks to explain how psychological elements or biases explain irrational decisions of investors in investment decision making. According to Shefrin (2001), "behavioural finance basically is a field of study that examines how psychology affects finance". It focuses on how human beings collect information, process it and use this information in decision making. It combines economics and psychology to examine why and how investors do what they do as well as explain how these actions affect financial markets. Behavioural finance explains how emotions and cognitive processes shape markets as well as impact stock prices. In order for investors to get a full comprehension of the performance of financial markets, it is imperative to analyse investors' behavioural patterns.

Behavioural finance explains anomalies existing in financial markets using psychology-based theories (Javed, Bagh & Razzaq, 2017). A market anomaly is a contradiction in a stock's

performance from its assumed price behaviour or trajectory, as proposed by the Efficient Market Hypothesis (EMH). The theory of behavioural finance is rooted in the Efficient Market Hypothesis, which proposes that prices of stocks are based on information and investors are unbiased and rational. While the Efficient Market Hypothesis (EMH) argues that the rationality of investors is essential in the efficiency of the financial market, behavioural finance contends that investors give in to emotions and some behavioural biases which disrupt the market.

Even though the field of modern finance has thrived, it is still difficult to explain on scientific grounds why people act irrationally while making investment decisions. It has been contended that the idea of an efficient market hypothesis is flawed to some extent, as not all investors possess computational and analytic capabilities that will allow them to make decisions that will always maximize utility. Several research findings have concluded that investors do not behave rationally, rather investors act based on their moods, beliefs and emotions; research findings by Kahneman and Tversky (1974) proved that investors do not employ finance models in investment decision making, instead they rely on heuristic principles. Since the 1960s, about 200 papers have been published exploring the impact of behavioural finance in decision making (Anissimov, 2004; Barberis & Thaler, 2002). Some of these researches include a study by Islam (2012) which analyses how behavioural finance affects the sale and purchase decisions in a stock market and a study by Ritter (2013) which also analyses how behavioural finance affect individual decision making.

Financial behaviour has been analysed through the lens of sociology, economics and psychology to buttress the understanding established by finance. According to Javed, Bagh & Razzaq (2017), experts of sociology propound that an investor’s behaviour is mainly influenced by the investor’s social environments. Economists propose investor behaviour primarily focuses on rationality or irrationality whiles psychologists have expanded on

investor behaviour by emphasizing on individual characteristics that affect decision making (Javed et al., 2017). However, these ideologies converge at a point since behavioural finance encompasses the study of psychology, sociology and economics and how they affect the behaviour of the financial market participants and their effect on the financial market.

The theory of behavioural finance revolves around heuristic theories or rule of thumbs which are used in investment decision making. According to the research Kahneman and Tversky (1974), heuristics are basically rule of thumbs that guide decision making of individuals by ignoring relevant information consciously or unconsciously. This makes decision making less complex since it reduces the process of assessing probabilities and predicting values thus simplifying decision making. Kahneman and Tversky (1974) discovered three key heuristics; representativeness, anchoring and availability bias.

1.1.1 Financial Markets and Investment Decision Making

The investment environment has evolved over the years and has become very dynamic following an increase in globalization and advances in technology. For investors to make the most of their investment choices, it is imperative they understand the impact of their emotions and cognitive biases on their investment decisions to allow them to maximize returns on their investments.

Decision making is a process that involves choosing an alternative for a range of options. Investment refers to the present commitment of money over a time period to derive future benefits which will compensate for or reward the period of the investment. Investor's decisions are expected to be influenced by complex finance models. Some of these models include the expected risk and return on an investment and the CAPM (Capital Asset Pricing Model), which is a risk-based asset pricing model. Decision making in a financial market can be effective when investors keep themselves updated with current information of markets, thus making the right decision to fully maximise utility. In traditional finance, it is assumed

that investors are rational hence make rational investment choices based on expected risk and return as well as CAPM. There are, however some undermining behavioural biases like overconfidence, herding behaviour, anchoring and availability bias that influence decision making. Usually, this decision-making process is affected by several factors. These factors could be situational, financial or psychological. Furthermore, an investor goes through the decision-making procedure by identifying a problem, searching for information, evaluating alternative buying options and in some cases, a post-purchase analysis. This implies investors in a financial market go through a similar process in making investment decisions.

1.1.2 Herd Behaviour

Herding behaviour refers to investors imitating or mirroring the investment decisions of other investors without proper analysis of available information or due diligence. Herding can also occur when firms face a common uncertainty or have imperfect assurance about the future. In such a situation, the decision of early movers serves as a benchmark for late movers giving them an incentive to mimic initial investors (Khanna & Mathews, 2011). There are numerous reasons for herding in and within different investor groups. According to research by Agrawal, Singhal and Swarup (2016), some reasons for herding amongst investors include lack of financial literacy, fear of investors losing their money and market image. Most often than not, investors lack financial literacy as well as computational and analytic abilities to assess the risk and return associated with an investment or security. Also, investors are often afraid of losing out on their investment by making an independent decision while taking into consideration market information.

1.2.0 Problem Statement

According to Lindhe, most financial crises occur as a result of widespread herding amongst investors in a financial market (2012). A classic example of a financial crisis caused by herding is the dotcom bubble in the late 1990s to early 2000s. An investment bubble is bound to happen when market behaviour rapidly drives the price of an asset way above its intrinsic

value. The bubble escalates as the price of the asset goes beyond economic rationality. However, investors go ahead to buy these assets whose prices are not supported by firm fundamentals. By so doing, investors disregard such essential market information because everyone else is buying these assets or investing in a particular company.

In recent history, Ghana has experienced and suffered a series of large-scale financial scams. In 1996, Pyram, a purported savings and loan company promised investors a 360% annual interest on monies invested whereas the Government T-Bills at the time promised a return of 29.05%. According to an article in the Ghana Business News, most people went ahead to invest in Pyram because their friends and relatives were doing so disregarding warning and instructions given by the Bank of Ghana (Dogbevi, 2015). Also, in 2015, it was reported by Graphic Online that hundreds of Ghanaians were reported to have been affected by the closedown of DKM with a majority of them losing their savings and investment amounting 77 million Ghana cedis (Kwawukume, 2015). DKM promised its investors interest rates of about 50% to 55% as compared to a rate of 25% on three months treasury bills by the government. The Bank of Ghana revoked the license of DKM because the firm could not pay out funds belonging to depositors and declared the venture not feasible and sustainable. Most of these investors including bankers and army officials invested their hard-earned money because their friends and relatives were doing same.

Finally, in 2018, Ghana experienced financial turbulence when investors of Menzgold later came to a realisation that the business model of Menzgold was not sustainable because of its outrageous interest rates of 60% to 120% per annum. On August 6, 2018 and October 2, 2018, the Bank of Ghana issued a notice to the general public which was directed at dissuading the Ghanaian citizenry from sending deposits to Menzgold Company Limited insisting that those who fail to heed the warning do so at their own risk (The Business &Financial Times, 2018). According to the Business &Financial Times (2019), some of

Menzgold's customers had initial doubts or reservations about investing with the firm, however they were later convinced by acquaintances and relatives who had already invested with them as well the use of influential figures as brand ambassadors (Yeboah & Ibrahim). It was also reported that some people were deeply convinced such that they liquidated their investments with other institutions, so they could invest in Menzgold (Yeboah & Ibrahim, 2019). The revelation that the operations of these companies were unregulated and unsustainable caused panic withdrawals within the financial sector resulting in a distrust of the financial system. It is evident that herding behaviour of investors or market participants can result in destabilization of markets and intensifies the fragility of the financial sector of a country (Sharma & Bikhchandani, 2000).

The recurrence of such financial sagas is likely if proper measures are not put in place to avoid similar cases from happening. News reports indicate that, for most Ghanaians, the decision to invest in a financial instrument or institution is heavily influenced by friends and family who happen not to have knowledge on investment, thus leading to losses (The Business &Financial Times, 2018). However, there is no empirical study conducted to validate these claims thus necessitating an empirical study of the phenomenon.

Gender is also a demographic that has potential effect on individual investment behaviours (Salem, 2019). Most results of prior studies revealed that women are risk-averse and have low confidence with regards to investments (Perera, 2006). However, women in Africa are becoming wealthier, more educated as well as business owners, making them key players in the investment sector. According to the Mastercard Index of Women Entrepreneurship (2019), in Ghana, 37.9% of businesses are owned by women. As women are gaining grounds in the investment arena and are risk-averse, they are more susceptible to herding when investing.

Various research that has been carried out in some countries like the USA, Finland, Taiwan, India, Kenya and Japan have established that behavioural biases like herd behaviour impact the decision making of investors (Javed et al., 2017). However, a considerable number of these researches are skewed towards developed economies but that of developing countries like Ghana remain untapped. This provides a scope for researchers to explore how emotions and cognitive biases affect individual investors in financial markets. Also, taking into consideration some obvious disparities like the level of trading activities, level of sophistication, rules and regulations between developed and developing economies, it will be worthwhile to compare outcomes of the research. The purpose of the study is to specifically analyse the impact of herd mentality on investor's decision making in Ghana. This research is to bridge the gap in literature with respect to differences in geographical locations and other demographics between Ghana and other countries by analysing the impact of herd mentality on investor decision making in Ghana.

1.3.0 Objectives of Study

This research is tailored at achieving these objectives;

1. To investigate the evidence of herding behaviour amongst mutual fund investors in Ghana.
2. To explore the moderating role gender plays in the herding behaviour of mutual fund investors.

1.4.0 Research Questions

The study questions are as follows;

1. Is herding behaviour present in the investment decisions of mutual fund investors in Ghana?
2. To what extent does gender influence the herding behaviour of a mutual fund investor?

1.5.0 Significance of Study

Ghana has an emerging and developing economy and it is very imperative to understand how behavioural finance affects the financial sector and the economy altogether. This study contributes significantly to the field of finance and seeks to fill a gap in literature. This study employs a technique of measuring herd mentality proposed by Javed et al. (2017) and individual investment information to evaluate the impact of herding behaviour on investment decision making. The outcome of the study will be very useful to a financial advisor, financial institutions and most importantly for the investors. This will be beneficial as it will help explain why investors deviate from their rational decisions. It will also help financial institutions to understand how cognitive biases and emotions come to play in investor decision making and this will help inform the nature of firm's advertisements as well as product design. This study outcome will also guide investors from losing their investment as they become aware of how emotions and cognitive biases affect their investment decisions. The study will also contribute to existing literature by investigating the presence of herding amongst mutual fund investors in Ghana.

1.6.0 Outlook of Thesis Report

The study is outlined in five chapters. The foremost chapter is an introductory explanation to the study which gives a contextual setting to the research, a problem statement, the objective of the research and the significance of the study. The second chapter highlights the literature review of the research which consists of a theoretical framework as well as empirical evidence which is related to the study. The third chapter discusses the methodology of the study and justifies the choice of research approach. The last but one chapter is concentrated on the analysis of the data collection and testing of hypothesis. Finally, the last chapter presents a conclusion to the study highlighting major findings as well as recommendations.

CHAPTER 2: LITERATURE REVIEW

2.1.0 Introduction

2.1.1 Traditional Finance

Traditionally, one proposition that has been extensively explored in the field of finance is the Efficient Market Hypothesis (EMH). According to this theory, there are three claims that form the basis of an efficient market. The foremost argument states that investors are rational and by implication will invest and value securities rationally. The second argument is focused on the knowledge that investors make use of all accessible market information in making financial decisions. Finally, the third argument proposes that investors will make the optimal decision that will increase their expected utility.

In recent times, financial markets have seen huge fluctuations; some of these fluctuations include market bubbles and markets crashes which go contrary to the assumptions of the EMH. Throughout the 1990s, statistics have recorded market anomalies that cannot be explained by standard finance models and to some extent, prove the inefficiency of these models (Ngoc, 2014). Conventionally, returns on investments were based on projections, past performance and market timing. However, due to various fundamental mistakes in decision-making processes, this leads to variations in expected returns.

2.1.2 Behavioural Finance

Behavioural Finance seeks to explain the violations and shortcomings of the theories of traditional finance. According to Shiller (1999), investors are not rational and are driven by fear and greed by speculating stocks to generate unrealistic returns. Put differently, investors are misled by their emotions, subjective reasoning, noise from crowds in financial markets and are in constant expectation of abnormal returns. Behavioural finance combines behaviours of individual investors and market phenomena to explain market anomalies that challenge theories like the capital asset pricing model, classical decision theory, rationality, modern portfolio theory the efficient market hypothesis and risk aversion. The building blocks of behavioural finance include heuristics, cognitive thinking and limits to arbitrage.

2.2.0 Concepts of Behavioural Finance

2.2.1 The Prospect Theory

Coined by Kahneman and Tversky in 1979, the prospect theory seeks to explain decision making under uncertainty. In its original state, it explains how investors behave when they are faced with two alternatives (prospects or gamble) when making decisions. The theory states that investors have an irrational propensity to make choices involving sure gains with a level risk than making choices involving sure losses. According to Tvede (1999), individuals have a high inclination to be more willing to stake with losses than with profits. The prospect theory assumes that the value of an alternative is calculated as the sum product of specified possible outcomes. Each sum-product consists of a utility and a weighted probability of the expected utility. In decision making, individuals are expected to neglect differences in the likelihood of an expected utility occurring. The prospect theory challenges the expected utility theory which assumes that decisions made by rational investors are based on rational expectations. The prospect theory describes the subjective behaviour of investors in decision making. Based on controlled experiments, the prospect theory has proved that individuals make choices based on possible gains or losses comparative to their current or specific situation rather than use complete available information or terms. When faced with a risky choice resulting in gains, individuals are likely to make a decision that will lead to a lower expected value but with a high level of certainty. However, when investors are confronted with riskier choices leading to possible losses, investors or individuals are likely to make decisions that will result in a higher expected utility so far as potential losses can be avoided. According to Kishore (2004), investors are not constantly risk-averse instead, investors are risk-averse with regards to gains but are risk-lovers in losses. This implies that individuals are more inclined to take more risk if they have experienced losses in the past. Therefore, investors are likely to respond differently when making investment choices and this is based on how gains or losses are framed as well as their past experienced losses. The prospect

theory is clearly in disagreement with the expected utility theory which states investors only takes into consideration choices relating to maximum utility and not losses.

2.2.2 The Expected Utility Theory

The expected utility theory proposes that an individual will select between risky and uncertain prospects by comparing which one gives a higher expected utility value. The utility value is calculated by adding the weighted sums to the sum-product expected utility and their corresponding probabilities. Per the expected utility theory, one should choose the alternative or option that has the greatest expected utility when making a decision. The expected utility theory and prospect theory are methods to decision making, but from different perspectives, nonetheless, the expected utility theory has been used extensively in the analysis of decision making. The expected utility theory has been widely applied and accepted in the field of behavioural economics. However, this theory has been critiqued for its failure to explain whether the rule of making the most of expected utility represents a rule of thumb to make decisions. The rule of thumb of making the most of expected utility represents a consequential form of thinking, in which decisions are only made solely based on their possible outcomes. The prospect theory, on the other hand, considers how the state of mind of an individual affects his or her choices. Some of these causes include regret aversion, loss aversion and mental accounting. According to Plous (1993), “the prospect theory is a great enhancement of the expected utility theory as many shortcomings of the expected utility theory are plainly identified and explained in the prospect theory”.

2.2.3 Heuristics Theory

Heuristics are mental alternatives that enable individuals to solve complications to make decisions efficiently and quickly. They are simple rule of thumbs used in problem-solving that shorten decision-making by reducing the complexity of assessing likelihoods of prediction of occurrences to make decisions (Albar & Jetter, 2009). Heuristics have always been considered as an inefficient method in making decisions and results in irrational

decisions behaviour. However, according to Waweru (2008), heuristics are quite useful in making decisions in a limited time period but could lead to biases as well. Rational decisions involve weighing potential costs against potential benefits but when limited with time and amount of information, individuals are forced to take mental shortcuts in decision making. Research has proved that heuristics compete with complex models like CAPM when investors are making decisions. Kahneman and Tversky (1974) in their studies, elaborated on factors affecting heuristics like representativeness, availability bias and anchoring.

Although, the use of heuristics is likely to lead to deviations from optimal decisions, there could be some level of close accuracy to elaborate models which are useful in decision making. Most investment decisions involve a high level of uncertainty and decisions are made based on other attributes but are generally dependent on the expected return on the investment. Past literature has proven that investors also do not always employ a systematic approach to gathering information and in decision making but often rely on their gut feeling or internal information (Sarin & Chowdhury, 2017). During a decision-making process, the process of gathering available market information could be costly and time-consuming, thus investors have a high tendency of giving in to mental shortcuts in making decisions which makes it less expensive, faster and simple.

2.2.4 Market Factors and Market Efficiency

Financial markets are bound to be affected by investor behaviour and this is described by the concept of behavioural finance. With reference to the behavioural finance, investors are susceptible to under or overreact to news or price changes, extrapolate current prices of stocks historical stock prices, ignore fundamentals regarding stocks, pay too much attention to popular stocks or seasonal stock price changes. These factors are likely to influence the decisions made by an investor. According to Waweru (2008), “factors of market” influence

the choices of investors and they include reaction to price changes, information from markets, customer preference, fundamentals of underlying stocks and past trends of stock prices.

Market Efficiency is achieved when stock prices are a true reflection of fundamental market information and any excess returns are levelled are cancelled by market mechanisms in the long run. (Fama, 1970). The concept of behavioural finance challenges this theory and explains some market anomalies such as price movements regarding IPO, stock splits and mergers. Investors do not react logically to novel market information but tend to be bullish and make irrational decisions when presented with investment or market information. According to Shiller (1998), the presence of market anomalies suggests that the fundamentals of rational choices underlying the EMH are not sufficient thus the need to look further into other representations of human behaviour in other sciences.

In general, behavioural finance does not put much emphasis on the impact of external factors like market factors on investor decision making. It therefore makes it inadequate if market factors are not considered in explaining the concept of behavioural finance.

2.3.0 Herd Behaviour

Herding behaviour refers to when investors imitate or copy the investment decisions of other investors without proper analysis of available information or no due diligence. The existence of herding has been extensively considered by researchers owing to the fact that investors rely heavily on shared information instead of available private or market information which leads to price deviation of financial assets from their intrinsic value. Several academic researchers have focused on herding behaviour of investors because herding heavily impact the prices securities which questions the credibility of some finance models in finance (Tan, Chiang, Mason & Nelling, 2008). Herding can further lead to some emotional or cognitive biases like conformity, congruity, home bias ,gossip and cognitive conflict, (Ngoc, 2014). Performance of fund managers and financial analysts are normally appraised by timely

assessment comparative to their peers. This will result in herding as low performing managers will copy the investment choices of high performing investors to keep their professional reputation. In trading securities, investors herd in their investment decision based on the masses' decision in selling or buying securities.

Herding can also occur when firms face a common uncertainty or have imperfect assurance about the future. In such a situation, the decision of early movers serves as a benchmark for late movers giving them an incentive to mimic initial investors (Khanna & Mathews, 2011). There are numerous reasons for herding within different investor groups. According to research by Agrawal, Singhal and Swarup (2016), some reasons for herding amongst investors include lack of financial literacy, fear of investors losing their money and market image. Most often than not, investors lack financial literacy as well as computational and analytic abilities to assess the risk and return associated with an investment or security. Also, investors are often afraid of losing out on their investment by making an independent decision while taking into consideration market information. Investors are likely to instead follow the decision of others with the hope that there will be a lower chance of losing their money due to market return volatility. Investors may herd or copy others to protect their reputation. Research has proven that individual investors are more likely to mimic or follow the investment decisions of a large group. Individual investors are more susceptible to herd than institutional investors because, market information is easily accessible to institutions than to individuals (Yang, Chen & Lin, 2013). According to Lakoniskok (1992), US pension fund managers happen to be less influenced by herd behaviour when trading with large stocks. Herding can also be analysed in the context of asset classes or security types. The degree of herding varies substantially across various asset classes or security types. Herding is more profound in corporate bonds whiles herding is less likely to happen in equity and mortgage bonds (Raddatz & Schmukler, 2011).

According to Bikchandani and Sharma (2000), spurious herding happens when investors are faced with similar decision problems and market information and decide to take the same decision. This may happen when investors identify the same market information and respond in the same way. Intentional herding on the hand is when investor purposefully imitates the decision of other investors. This is likely to occur when investors after observing the investment decisions on other investors, change their decision and act in the same direction. Most often, spurious herding can lead to inefficient markets whiles intentional herd is likely to lead to systematic risk and fragile markets.

2.3.1 Measuring herding

Many methods of herding have been explored in herding behaviour literature. One of the pioneering techniques of measuring is that of Lakonishok, Shleifer and Vishny (1992). It describes herding as the average inclination of a group of investors to trade specific stocks within a time period. The LSV has been critiqued for the invalid assumption of its binomial distribution and its inability to specify the direction of herding. Another model which measures herding behaviour intuitively is the CH model which was suggested by Christie and Huang (1995). The existence of herding was investigated on the side of investors during market stress. The CH model accesses the closeness of individuals returns to the market returns which is known as dispersion. Investors are likely to follow market performance in times large market movements which means investors will base their investment decisions on market performances or conditions. A study by Chang, Cheng and Khorana (2000) further enhanced the model proposed by Christie and Huang (1995), which states that if the market participants herd, individual investment returns will not diverge expressively from the market performance or return. This model developed by Chang et al. (2000) is basically an expansion of the CH model and is popularly referred to as the CCK model. The CCK provides a less rigorous method for measuring herding and suggests that during times of market turmoils,

dispersion rises. Unlike the CH model, the CCK model is more capable of detecting herding during times of market turmoils as well as calm market conditions.

Also, a study by Hachicha, Bouri, & Chakroun, (2008) on the Tunisian stock market suggested a new measure of herding. This measure is based on a cross-sectional dispersion of beta to establish the dominance of the herd. The new measure of herding behaviour provided better results as compared to that obtained the models developed by Christie and Huang (1995) and Chang, Cheng and Khorana (2000).

Nonetheless, all these methods still are elusive of perfection. Herding can also be measured using a qualitative approach. Past researches have used survey methods in collecting primary data from investors to measure herding and other behavioural biases. Since behavioural finance aims at exploring how emotions and cognitive biases affect individuals, arguments can be made that primary data is will a clearer picture of investors' sentiments. In a research conducted on the Tunisian Stock Exchange, substantial proof was found for the existence of behavioural biases in the Stock Market using a sixty-three-item questionnaire (Dewan & Dharni, 2019). The survey for the research asked questions for both behavioural biases and demographic biases. The qualitative approach has been criticized because respondents likely not admit their biases however, creating scenarios can eliminate that tendency of errors.

2.3.2 Herding in Mutual Funds

Herding has been analysed in the sphere of mutual funds to examine whether or not investors act irrationally in trading mutual funds. Mutual funds account for a large percentage of securities traded on financial markets. Mutual funds afford its investor or buyers the benefit of risk diversification by offering investors a portfolio of different assets to invest. According to Sarpong and Sibanda (2014), mutual fund investors and managers who have gained significant returns consistently have attributed their success to unique investment strategies. Past literature has proven the evidence of herding in financial markets like Japanese Mutual

funds, Swedish mutual funds, US mutual funds, German mutual, Indian mutual funds, South African mutual funds and Australian mutual funds (Dewan & Dharni, 2019). There are also some investors who choose to invest in the contradictory direction of the herd in the market and are known as contrarian investors.

According to research findings by Wermers (1999), there is a high tendency of investors of mutual funds to herd when making investment choices. Buy-side herding of mutual funds is found to be strong in past-return stocks whiles sell-side herding is on the low past return stock. Also, the level of herding varies significantly for growth-oriented mutual funds than it is for among income funds. A growth-oriented fund is a differentiated portfolio of stocks with a goal of only awarding capital gains, with little dividend pay-outs whereas income funds pay out dividends as well as capital appreciation. This is because growth mutual funds have less accurate data about its future stockholders' earnings as compared income funds which mostly gives value stocks, giving investors of growth-oriented funds an inexplicable inducement to herd.

The positive trend in the progress of mutual funds in Ghana, coupled with the introduction of more mutual funds recently shows the importance of mutual fund investment in Ghana. Mutual funds in Ghana are important to the country's financial market because Ghana's economy is developing, and capital markets are not so matured and receptive of small-scale investors (Kong, Owusu-Akomeah, Antwi, Hu & Acheampong, 2019). For optimal performance of the mutual fund industry in Ghana, some drawbacks such as behavioural biases should be tackled. Therefore, this research paper contributes to literature by exploring the impact of herd behaviour on mutual funds in Ghana.

2.3.4 Herding of Institutional and Individual Investors

There are various studies that study both institutional and individual herding and how they impact investment decision making. Comparing both classes of investors, institutional

investors are less prone to herding and trading selectively since they have easy access to market and private information. Individual investors rely heavily on public information and are likely to be influenced by sentiments and attention-grabbing events. They react to all movement in price and volumes of securities traded. According to Li, Rhee & Wang (2017), institutional investors herd more with larger stocks than on smaller stocks; however are picky in choosing smaller stocks. Individuals investors invest relatively more in assets like derivatives or real estate. On the other hand, individual investors mostly trade small stocks than large stocks. Findings from a study by Wermers (1999) agree with Edelen and Warner (2001) that, on average, there is a significant correlation between trading volumes of individual investors and institutional investors. According to Li et al. (2017), comparative to institutional investors, the degree of herding for individual investors is very responsive to movements of returns of the market. In herding, individual investors behave differently with regards to selling decisions and buying decisions of investment. According to research findings by Barberis and Thaler (20013), individual investors readily react to attention grasping securities for purchase decisions than in selling decisions. Attention grasping stock include stocks with abnormal returns with unusually high trading volumes. These results validate the fact that individual investors are more susceptible to herding than institutional investors. This research will therefore analyse the impact of herding behaviour on mutual fund investment decisions in Ghana.

2.3.5 How Gender Affects Herding

It is believed that investors choices are strongly influenced by the individual investor's demographics. Over the years, investment behaviour has evolved as demographics like gender, income level, level of education and age have been explored in relation to investment decision making. Past research on the relationship between gender and investment decisions has proven that females are likely to be risk-averse as compared to males. (Perera, 2006). By

opposing this standpoint, recent research has shown otherwise; a number of experiential research have found that both males and females are overconfident. (Anuradha and Anju, 2015). However, it is a stereotypical notion that females do not have an appetite for risk as compared to males, and this has been validated by research findings in the past. Additionally, men may be involved and attracted to the trading of stocks than women, meaning men stand a chance of showing a greater level of expertise. According to Wang (1994), since men are considered to be less risk-averse than women, investment dealers advise females to invest in investments with low risk, which leads to lower returns. When an investor is confident, he or she is expected to count on private information when making an investment decision. This implies men are less interested in herding as compared to women who are less confident. However, individual investors have become aware of how behavioural biases can affect their decisions. In addition to that, women are being empowered in various forms and are exposed to high levels of investment sophistication. This research, therefore, seeks to explore how gender comes to play in herding in investment decision making

2.3.6 Herding Behaviour in Different Market Conditions

Studies by Keim and Madhavan (1995), suggest that investors respond to news about the financial market differently. In the literature of herding, studies have found that herding is more dominant in extreme market situations (Christie & Huang 1995). During a market crisis, investors become more anxious, and their level of uncertainty is heightened. In a bid to reduce their anxiety, investors seek conformity and become doubtful of their own belief or available market information and tend to mimic a public consensus. Contrary to this finding, Hwang and Salmon (2004) suggest that there is no association between herding and market conditions. Market stress does not cause herding, but herding becomes more apparent during market stress. Herding can also become observable during calm economic conditions when herding of investors only drives reallocation of funds to a specific industry and does not have

a major substantial variation on the market index. According to Zaharyeva (2009), to only focus on herding only during times of market stress would lead to researchers missing out on some essential parts of herding.

In 2010, Economou, Kostakis and Philippas examined the prevalence of herd behaviour in dire market conditions in the Italian and Portuguese stock markets for the years 1998- 2008. Together with this research, they also analysed the presence of herding during the global financial crises in 2008. Results of the study proved that herding is stronger during the period of the financial crisis. Contrary to this, Subash (2012), in his research findings, suggested that investors in the were rational and more cautious when investing during the global financial crisis.

2.4 Investment Decision Making

Decision making refers to the analysis of a range of alternatives and selecting the best suitable option. Decisions can be affected by either personal factors or technical factors. Similarly, in the field of finance, investors invest in assets to generate income or money in the long run, and these decisions are based on both technical and personal factors. Some personal factors include age, educational background, income level and genders. Individual investors also make investment choices based on some finance models like the Capital Asset Pricing Model and the Arbitrage Pricing model. According to Chandra (2008), to make an effective decision, investors need to evaluate all the alternatives of the problem and evaluate them by employing cognitive psychology. A decision could be arrived at by proper evaluation of all possible alternatives. Therefore, it is necessary for investors to keep themselves abreast with current market information from various sources to result in proper decision making.

Effective investment decisions in financial markets do not require only sharp financial and computational skills, but also a better understanding and insight into human nature in a broad perspective. Investors differ in characteristics such as age, gender, level of education and

economic status, which makes it inappropriate for investors to mimic the investment decisions of others. One investor's optimal investment decision may not be suitable for another investor. Factors like investment objectives, inflows and outflows of cash, portfolio makeup and risk tolerance level differ across investors thus, investors should consider all these factors in making an optimal investment decision.

When faced with an investment decision, individual investors lookout for an action plan for investing in the highest yielding financial assets. According to the theory of rationality, it is assumed that investors will choose assets that will maximise yields and minimise losses. However, there are instances where investors make irrational decisions when investing. According to Paul Slovic (1972), the level of uncertainty and risk is linked to a decision of rationality and this is associated with every investment decision option. Behavioural biases come to play when investors are faced with a magnitude of risk and uncertainty. However, according to Madaan and Singh (2019), some past research findings have found that individual investors act rationally when making investment decisions only when they have all relevant available information. It further explains that empirical evidence of irrationality observed when investors do have rights to relevant market information. Herding of investors results in excessive trading volumes and high transaction costs. It is also observed that the losses or gains realised from investments are mainly dependent on the competency to make sound financial decisions. The focus of this research study is to find out whether individual investors rely on finance theories during investment decision making or they are more apt to make irrational decisions based on psychological biases or errors.

CHAPTER 3: METHODOLOGY

3.1.0 Introduction

The objective of this research is to examine the impact of herding behaviour on individual investment decisions of investors in Ghana specifically in mutual funds. This chapter explains the methodology that will be employed in achieving the objectives of the study. The chapter also justifies the choice of methodological approach, population, sample size, research approach and sampling technique.

3.2.0 Research Design

The study adopts the methodology used in research by Baddeley, Burke, Schultz and Tobler (2012) which consists of an experimental analysis embedded in a questionnaire to determine the tendency of herding in mutual fund investors. A quantitative approach was adopted to explain this relationship. A quantitative approach employs a systematic examination of a phenomenon by collecting data and analysing it using computational, statistical or mathematical techniques. The study also employs an explanatory approach that will link ideas to establish a cause and effect relationship. The main focus of the research to examine the presence of herding behaviour in the investment decisions of mutual fund investors.

3.3.0 Population and Sampling Technique

The population for this research is the number of mutual funds investors in Ghana. For this research, a random sampling technique was employed. Respondents were involved based on their willingness to participate. The sample size for the study will be 60 to get meaningful results. This will be fairly representative of the population as compared to previous studies on herding.

3.4.0 Data Collection and Instrument

For this research, primary data was collected using a designed questionnaire. Since herding behaviour explores the emotional and cognitive biases of investors, collecting primary data is likely to convey a better representation of the behaviours of investors. The reason for the

selection of a questionnaire as a tool of data collection is that research questions are defined and easy to interpret. Furthermore, a questionnaire is a relatively easier method to obtain uniform data which is easy to analyse.

3.5.0 Design of Measurement and Questionnaire

The questionnaire is divided into three sections: demographic data, a hypothetical market experiment and factors that affect investment decisions. The first section comprises of questions based on demographics like gender, occupation, level of education, and level of risk appetite. The second section which is a quasi-experiment allows the researcher to conduct a hypothetical market experiment with the objective finding out the propensity of investors herding in a real financial market setting. The third section of the questionnaire consists of scenario-based questions meant to collect information investor's opinion on herding using a 5-point Likert scale where 1 represents "highly unlikely" and 5 being "highly likely. Both section 2 and 3 were aimed at measuring the presence of herding.

3.5.1 Design of Quasi-Experiment

Following the experimental design of Baddeley et al. (2012), participants were presented with a hypothetical market scenario where they had to allocate money (an amount of GHS 500) in two scenarios across the mutual funds traded in the hypothetical financial market. The mutual funds consisted of a money market fund, a balanced fund and an equity fund. To trade in the mutual funds, participants were given two sources of information sequentially. First, participants were presented with market information which included the past performance of each mutual fund over an 8-year period and the current rates of the fund. The market information presented about the mutual funds was collected from real mutual funds traded on the Ghanaian financial market for the past eight years. Participants were then asked to allocate the money across all the funds after analysing the market information provided. In the second scenario, participants were presented with social information or herd information. The social or herd information provided was actual informed choices of four investors (the

herd) based on the same information in the first scenario in a pilot test. Respondents required to invest in the mutual funds once more with the same amount (GHS500) but now based on the two sources of information available: market information and social information.

Scenario Structure

Scenario 1: Participants were given market information about the past performance of mutual funds in charts over an 8-year period as well as the profile of the mutual funds. They were then required to allocate the money across all the funds in the markets.

Scenario 2: Participants were then presented social information about herd choices. This was presented in a pie chart showing the choices of the herd by showing how much each investor allocated to the various funds. Together with the information provided in scenario 1, investors were asked to allocate the money across the funds. The choices of the herd were skewed to the equity fund as investors allocated the greatest portion of their money to the equity fund.

The quasi-experiment is based on volumes of trade and herding will be measured based on differences in volumes after exposure to market and social information. Therefore, an investor is considered not to have followed the herd when the decision made in scenario based on only market information is the same as the investment decision made in scenario 2 using both market and social information. Other the hand, an investor is considered to herd when the decision made in scenario 1 differs from that of scenario 2.

3.6.0 Data Analysis

The data collected were coded and tabularised for analysis using mean scores, standard deviation as well as frequencies and was analysed in the R software. A paired t-test analysis was conducted to determine whether or not the mean difference of the amount invested in both scenarios is zero. To determine whether or not gender has an impact on the propensity

to herd, a chi-square test was carried out to examine whether or not there is a relationship between herding and gender. The chi-square test was to test the statistical significance between the variables. To test the validity and consistency of the content of the questionnaire for the study, a pilot test was conducted with 10 student investors.

3.6.1 Paired Sample T-test

A paired sample t-test is a hypothesis test used to make inferences about the differences between the means of two samples (Shier, 2004). In a paired t-test, each respondent is evaluated twice resulting in a paired observation. In this study, respondents will allocate money across mutual funds under the two scenarios resulting in a paired observation. To test the hypothesis that the amount of money allocated to mutual funds before and after the exposure to social or herd information, a paired sample t-test was conducted in R. The t-test analysis was conducted for each mutual fund; the money market fund, the balanced fund and the equity fund. Prior to the analysis, the data must meet the assumptions of conducting a paired sample t-test.

Assumption 1: The data should be continuous meaning it should be measurable or quantifiable. In the case of the study, the data is the amount of money allocated to the mutual fund and money can be termed as quantifiable.

Assumption 2: The sample group should be dependent. In this study, the subjects in each sample are the same for both observations.

Assumption 3: The sample data should be randomly selected for the population. In this study participants were selected randomly based on their willingness to participate.

Assumption 4: The difference between the paired value should be normally distributed. Using the Shapiro-Wilk's method, the output of the normality test reported a p-value greater than 0.05. Then we can assume normality of the data.

To achieve the research objective of establishing the existence of herding in mutual fund investors in Ghana, the following hypotheses were generated and tested.

H0: The mean difference of the amount of money allocated to mutual funds for both scenarios is zero

H1: The mean difference of the amounts allocated to the mutual funds for both scenarios is not zero

3.6.2 Person's Chi-Square Test

The chi-square is a test measurement used in testing the relationships between two variables. In a chi-square, there is a test of independence between two categorical variables. This study seeks to find how gender influences the propensity of herding. The variables involved in the research objective are categorical variables making the chi-square appropriate for this study. The following assumptions need to be met to ensure the validity of results.

Assumption 1: Both variables should be categorical. In this study the variables to be tested in the chi-square test are gender and herding behaviour. The dependent variable is the herding behaviour or instinct of investors. This will be measured based on differences in volumes after exposure to market and social information. The independent variable is the gender of the investor which is either male or female.

Assumption 2: There should be groups or levels to each variable. The dependent variable herding was classified as "no herding" and "no herding". The independent variable gender was classified as "male" and "female".

Assumption 3: The observations should be independent. The variables gender and herding are not paired in any way.

Assumption 4: The sample size should be relatively large enough. To determine whether or not the sample is large enough, the counts of every cell should be 5 or more. The data meets the expected counts condition making the sample large enough. (Refer to table 12)

To achieve the research objective of establishing whether the gender of an investor affects the propensity of investors of mutual funds to herd, the following hypotheses were generated.

H0: There is no association or relation between the gender of investor and his or her propensity to herd.

H1: There is a association or relation between the gender of an investor and his or propensity to herd.

3.7.0 Potential Drawbacks

Although collecting data using a questionnaire is less expensive and not time-bound, it comes along with some possible downsides. Since respondents will be informed about the purpose of the questionnaire, respondents may be reluctant to admit their biases and may not give a true reflection of answers received. However, the hypothetical market may eliminate the tendency of this error to some extent. Also, respondents will not be explicitly informed about the bias being measured so as to not influence their decisions.

Moreover, given the fact respondents will answer the questionnaire at their preferred time in a relaxed environment, respondents may give responses contrary to when they are found in a stressful and fast-moving market environment. This might not result in a true reflection of the herding phenomena. To mitigate this, the questionnaire will be timed for 5 minutes so investors will be quick with their decisions.

3.8.0 Ethical Concerns

Respondents will be given the right to either reject or accept to take part in the survey as well as their responses will be kept anonymous. The questionnaire will be tested before the actual survey to enhance comprehension and content validity. Also, the content of the questionnaire

will be examined by the Institutional Review Board of Ashesi University to ensure clarity and appropriateness of questions.

CHAPTER 4: DATA ANALYSIS AND DISCUSSION

4.1.0 Introduction

The data was gathered using a questionnaire and this was designed in line with the objectives of the study. To establish the credibility of the questionnaire, a pilot test was conducted with a sample of 10 student investors and finalized before administered to the general public. The data collected was processed using excel and R software. The data was cleaned by clearing responses with poor quality like responses with missing and wrongfully calculated figures. To achieve the research objectives three statistical techniques were employed and they include descriptive analysis, t-test and chi-square test.

4.2.1 Response Rate

From 80 questionnaires administered to investors, 71 respondents answered the questionnaire and 60 answered correctly resulting in a 92% response rate. This rate is commendable, and this is due to the process of data collection, where the questionnaire was administered personally. The response rate is consistent with Mugenda & Mugenda's (2003) condition that a rate of 50% and above is adequate and representative for reporting and analysis. The rate of response shows a willingness of the respondents to participate in the study.

4.3.0 Descriptive Analysis

This section shows the results of the analysis of the first section on the questionnaire which consists of the demographics of respondents.

4.3.1 Distribution of Respondents by Gender

The sample consisted of 31 females and 40 males making 44% of the respondents are female and 56% males. This indicates that a greater proportion of the sample is made of males.

Table 1: *Gender Distribution*

Gender	Frequency	Percentage
Male	40	56%
Female	31	44%
Total	71	100%

Source: Research Findings

4.3.2 Distribution of Respondents by Age

The age distribution is categorized as 18-25 years, 26-34 years, 35-44 years, 45-54 years and 55 years and above. A minority of the respondents were aged between the 35-44 years consisting of 10% of the sample population. The age range between 18-25 years was the most represented age bracket consisting of 50% of the sample. Finally, the age range between 25-35 years consisted of 45% of the sample population. With a greater proportion of the sample being in the 25-35 years age bracket, it is expected that since these investors are in a relatively older age bracket, these investors will have more knowledge, expertise and experience in the trading of mutual funds thus will be less susceptible to herding. Another possibility is the tendency of investors being overconfident based on their knowledge and expertise.

Table 2: *Age Distribution*

Age Bracket	Frequency	Percentage
18-25 years	36	50%
26-34 years	29	40%
35-44 years	6	10%
45-54 years	-	-
55 years and above	-	-
Total	71	100%

Source: Research Findings

4.3.2 Highest Formal Qualification

The educational level of investors was categorized into eight groups which include elementary school, secondary school, diploma, degree, postgraduate diploma, MBA/MSc, PhD and HND. The results reveal that the highest proportion of the respondents, 73% have acquired an undergraduate degree or a bachelor's degree as their highest form of education. The second highest group was persons with a master's degree and secondary level education comprising of 7% each of the sample population. The other qualification represented about 1% each of the population sample. The results indicate that a greater proportion of the study had at least secondary level education therefore participants understood the information the

study was asking for. It also shows that the respondents were academically inclined hence were familiar with some terms and could answer the questions correctly. Investors with higher levels of education tend to more knowledge about financial markets hence are less prone to herding. Since the majority of the sample have secondary school education, it was expected that most of the investors were likely to herd when making investment decisions.

Table 3: *Academic Qualification*

Highest Academic Qualification	Frequency	Percentage
Degree	52	73%
MBA/MSC	7	10%
Secondary School	7	10%
Postgraduate Diploma	2	3%
Diploma	1	1%
PhD	1	1%
HND	1	1%
Total	71	100%

Source: Research Findings

4.3.3 Highest Professional Qualification

Majority of the respondents did not have any professional qualifications which consisted of 72% of the sample population. The most represented professional qualification was respondents with the Ghana Stock Exchange qualification and that consisted of 18% of the population sample and 4% of the sample had ACCA qualification. The other qualifications were represented by 1% of the sample. Since a greater proportion of the sample have no professional qualification, it can be expected that investors were likely to have a high tendency to herding.

Table 4: *Professional Qualification*

Professional Qualification	Frequency	Percentage
ACCA	3	4%
CCNA	1	1%
FMVA	1	1%
GSE	13	18%

Professional Qualification	Frequency	Percentage
HND	1	1%
ICA	1	1%
None	51	72%
Total	71	100%

Source: Research Findings

4.3.4 Current Occupation

The occupation of respondents was categorised as public sector employee, private sector employee, self-employed, unemployed, student and retired. A most considerable proportion (46%) of the sample population are persons working in the private sector. 37% of the sample population were student investors. The other categories which include public employees, self-employed, unemployed, retired, were represented by 8%, 6%, 3% of the sample respectively. Majority of the sample are private-sector employees who are most likely to earn incomes in their various field of work. It is therefore expected that as their income increases these are likely to herd when making investment decisions.

Table 5: *Occupational Status*

Current Occupation	Frequency	Percentage
Private Sector Employee	33	46%
Public Sector Employee	6	8%
Self- employed	2	3%
Student	26	37%
Unemployed	4	6%
Total	71	100%

Source: Research Findings

4.4.0 Results from Likert Questions

The section describes the results of the third section of the questionnaire. The third section of the questionnaire consists of scenario-based questions meant to collect information investor's opinion on herding using a 5-point Likert scale where 1 represents "highly unlikely" and 5 being "highly likely.

4.4.1 Results of analysis for market variables and investment decisions

The impact of the market variables on investment decision making was analysed using the mean scores of investors responses. The results are shown in the table below:

Table 6: *Results of analysis for market variables*

Factor	Variables	Mean	Std Deviation
Market information	Market information is significant when investing in mutual funds.	4.93	0.799
	Past trends of mutual funds are significant when investing in mutual funds.	4.6	0.995
	Market information or the profile of mutual funds is essential when investing in mutual funds.	4.41	1.078

Source: Research Findings

Market information, past trends of mutual funds and market fundamentals of mutual funds are the variables that influence choices of mutual fund investors. Respondents indicated their responses using a Likert scale where 1- Extremely disagree, 2- Highly disagree, 3- Somewhat disagree, 4- Somewhat agree, 5- Highly agree and 6- Extremely agree. The impact levels of variables on the investment choices are identified by finding the sample mean of each variable.

The mean values will be interpreted using the following rules: Mean values that are less than 2 indicate that the variables have low impacts on the choice of mutual fund investments, mean values are from 2 to 4 indicate that the variables have moderate impacts on the choice

of mutual fund investments and mean values are from 4 to 6 indicate that the variables have high impacts on the choice of mutual fund investments

From table 7, the mean values indicate that market factors strongly impact the investment choice of mutual fund investors. This indicates the individuals have the tendency of considering market information, past trends of mutual fund performance and market fundamentals carefully before making their investment. The standard deviation measures how far away data points are from the mean and a high standard deviation means there are data points spread over a large range from the mean. The standardized deviations of the variables are relatively high as compared to the mean and this indicates that there may be some mutual fund investors who solely focus on the market fundamentals whenever they invest in mutual funds. The high level of influence market variables has on herding can be linked to investors level of education which shows that most of the investors have at least secondary school education. This implies they are capable of reading and analysing available market information. However, the financial markets are in Ghana are not so matured and are slow to in their response to market information and its dissemination (Kong, Owusu-Akomeah, Antwi, Hu & Acheampong, 2019). Investors may have to resort to unofficial sources of information which may result in negative returns on their investments.

4.4.2 Results of Likert analysis for herding variables and investment decisions

The impact of the herding variables on investment decision making was analysed using the mean scores of investors responses. The results are shown in the table below:

Table 7: *Results of analysis for herding variables*

Factor	Variables	Mean	Std Deviation
Herding	The investment decisions of other investors have an impact on my choice of mutual fund.	3.63	1.275
	The investment decisions of other investors have an impact on my mutual fund investment decisions.	3.53	1.241
	I react quickly to the changes of other investors' decision and mimic their responses to the mutual fund market.	3.03	1.365

Source: Research Findings

Table 6 presents how mutual fund investors follow other investors trading decisions. Three dimensions of herding were analysed, and they include the choice of mutual funds, volumes of mutual funds and reaction to changes of other investors decision. Respondents indicated their responses using a Likert scale where 1- Extremely disagree, 2- Highly disagree, 3- Somewhat disagree, 4- Somewhat agree, 5- Highly agree and 6- Extremely agree. The impact levels of each variable on the investment choices are identified by finding the sample mean of each variable.

The mean values were interpreted using the following rules: Mean values from 4 to 6 indicate that the variables have significant or high impacts on the choice of mutual fund investments, mean values are from 2 to 4 indicate that the variables have moderate impacts on the choice of mutual fund investments and mean values that are less than 2 indicate that the variables have low impacts on the choice of mutual fund investments

From the table above, the mean values of the variables indicate that mutual investors moderately follow other investor's decisions. The standard deviation measures the possible variation in the mean responses and a high standard deviation means there are data points spread over a large range from the mean. The standard deviation of the variables indicates

that there are some investors that rely heavily on other investors decisions when investing in mutual funds. The results therefore show that herding variables have an impact on investment decisions of mutual fund investors in Ghana. These findings support the research of Chen, Rui and Xu (2003), which found that herding is strong in emerging and developing financial markets like that of Ghana because of low governmental interventions and the low quality of information disclosure to the general public. This reinforces the earlier findings that although investors are capable of analysing market information for optimal investment decision making, the unavailability of market information results in investors following the decisions of other investors.

4.5.0 Results from the Quasi-Experimental Design

This section shows the results of the analysis for the third section of the questionnaire. Following the experimental design of Baddeley et al. (2012), participants were presented with a hypothetical market scenario where they had to allocate money to mutual funds traded in the financial market. Details of the experiment are the methodology section.

4.5.1 Paired Sample T-Test Analysis Results

To test the hypothesis that the amount of money allocated to mutual funds before and after the exposure to social or herd information, a paired sample t-test was conducted in R. The t-test analysis was conducted for each mutual fund; the money market fund, the balanced fund and the equity fund.

Money Market t-Test Analysis

A paired t-test was conducted to compare the mean score of amounts allocated to the money market fund. Table 9 shows the mean difference of amounts allocated to the money market fund. The mean difference of 22.5 indicates the amounts of money allocated to the money market fund by investors decreased in the second scenario. The p-value of the test is 0.009

and this is less than the 0.05 significance level. Therefore, we can reject the null hypothesis and infer that the average amount of money allocated in the first scenario is significantly different from the average amount of money allocated to the money market fund in the second scenario. It can be concluded that investors are likely to herd when making an investment decision concerning money market mutual funds.

Table 8: *Results of Money Market Fund T-test Analysis*

	Paired Differences						
			95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Lower	Upper	t	df	sig
	22.5	90.58	5.78	39.21	2.69	59	0.009

Balanced Fund T-test Analysis

A paired t-test was conducted to compare the mean score of amounts allocated to the balanced fund. Table 10 shows the mean difference of amounts of money allocated to the balanced fund. The mean difference of 26.67 indicates the amounts of money allocated to the balanced fund by investors decreased in the second scenario. The p-value of the test is 0.004 and this is less than the 0.05 significance level. Therefore, we can reject the null hypothesis and infer that the average amount of money allocated in the first scenario is significantly different from the average amount of money allocated to the balanced fund in the second scenario. It can be concluded that investors are likely to herd when making an investment decision concerning mutual funds.

Table 9*: Results of Balanced Fund T-test Analysis*

	Paired Differences						
			95% Confidence Interval of the Difference				
	Mean	Std. Deviation	Lower	Upper	t	df	sig
	26.67	63.79	8.76	44.53	2.99	59	0.004

Equity Fund T-test Analysis

A paired t-test was conducted to compare the mean score of amounts allocated to the equity fund. Table 11 shows the mean difference of amounts allocated to the money market fund. The mean difference of -35.83 (SD = 110.46) indicates the amounts of money allocated to the money market fund by investors increased in the second scenario. The p-value of the test is 0.009 and this is less than the 0.05 significance level. Therefore, we can reject the null hypothesis and infer that the average amount of money allocated in the first scenario is significantly different from the average amount of money allocated to the money market fund in the second scenario. It can be concluded that investors are likely to herd when making an investment decision concerning mutual funds and their herding decision could possibly lead to lower investments in equity mutual fund. These findings are consistent with that of Evrim, Ergün and Yeşilova (2018), which concluded that mutual fund investors mimic each other's financial transactions when trading equity mutual funds.

Table 10*: Results of Equity Fund T-test Analysis*

	Paired Differences					
			95% Confidence Interval of the Difference			

	Paired Differences						
	Mean	Std. Deviation	Lower	Upper	t	df	sig
	-35.83	110.46	-72.29	0.63	-1.97	59	0.043

4.5.2 Chi-Square Test Results

The chi-square test was conducted to examine the relationship between gender and herding behaviour. Referring to Table 12, the tabulated chi-square results shows a statistic test value of 0.3431 at a 5 per cent significance level. Table 12 shows to what extent gender affects the propensity of a mutual investor to herd. From the table, 7 females and 12 males do not herd whiles investing in mutual fund investment whiles 20 females and 21 males herd when investing in mutual funds. The p-value of 0.558 is greater than the 0.05 significance level, hence we accept the null hypothesis that there is no relationship between gender and the propensity of mutual fund investors herding whiles investing. According to the results of the chi-square test, there is no relationship between gender and the propensity of herding in mutual funds. Contrary to what was expected, a greater proportion of men exhibited herding behaviour than women. These findings are in agreement with the findings of Hira and Loibl (2008) which suggest that men are more likely to adjust their investment based on the other investor's decisions. Also, in the context of the Ghanaian financial market, there has been an increase in women's access to financial services which translates financial literacy. According to the World Bank report (2019), "54% women in Ghana have an account with a formal financial institution". However, these results do not conform with the findings of Salem (2019), who concluded that women exhibit greater herding, have low-risk tolerance and have lower investment literacy.

Table 11*: Results of the Chi-Square Test*

Herding Behavior	**Gender**			
	Females	**Males**		**p-value**
Do not Herd	**7**	**12**	**0.3431**	**0.558**
Herd	**20**	**21**		

CHAPTER 5: CONCLUSION

5.1 Introduction

The chapter presents a summary of research findings from the statistical analysis in the previous chapter. This chapter includes conclusions and recommendations for future research.

5.2 Summary of Findings

The statistical analysis was designed to investigate/examine evidence of herding in mutual fund investors in Ghana as well as find out whether gender has an impact on the propensity of herding. Using a Likert scale, respondents expressed the degree at which they follow other investors when making decisions and whether they consider market information when investing. Respondents were of the opinion that they consider market information when investing in mutual funds. This means the respondents have the tendency of considering market information, past trends of mutual fund performance and market fundamentals carefully before making their investment and however follow the decisions of other investors whiles investing. Respondents also agreed using the Likert scale measure that they follow other investors decisions whiles investing. This means the choices of financial instrument, changes in investment, the volume of investments of other investors have an impact on the decisions of the respondents. This research finding supports the research results of Ngoc (2014) in the behaviour pattern of individual investors. The results of the quasi-experiment also indicated the presence of herding of mutual fund investors. According to the results of the chi-square test, there is no relationship between gender and the propensity of herding in mutual funds. However, a greater proportion of men exhibited herding behaviour than women.

5.3 Recommendations

Although these justifications may not be conclusive, future research could be conducted to find what influences the herding behaviour of mutual fund investors in Ghana. This research focused on individual mutual fund investors; thus, further research can be conducted for institutional investors as well as other financial markets. Further research could consider

other behavioural biases like anchoring, overconfidence, availability bias and representativeness.

This research is of importance to individual investors, financial advisors and mutual fund companies. For investors, understanding the impact of behavioural biases on investment decisions will allow investors to make more informed decisions. This research also contributes to the existing body of literature as previous studies on behavioural biases have been conducted in developed countries of the world.

5. 4 Conclusions

Herding behaviour can be observed in a wide range of human activities and this study specifically focuses on financial herding in mutual funds. Herding in financial markets can result in destabilising effects on the financial sector of a country (Sharma & Bikhchandani, 2000), thus the importance to understand this phenomenon and how it impacts investment decision. The research was carried out with the objectives of studying the presence of herding in mutual fund investors in Ghana as well as find out whether gender has an effect in the propensity of herding. Primary data was gathered using a structured questionnaire from investors. The study provides evidence of the tendency of mutual fund investors in Ghana to herd whiles investing. The study also concludes that, there is no association between gender and the propensity to herd however, more men exhibit herding while investing than women do. This can be attributed by the statistic that men show a higher level of overconfidence (Baber & Odean, 2001) than women thus are more prone to herding than women. The results of the study also indicate that herding has an impact on the investment decisions of mutual fund investors in Ghana. These results can be attributed to the fact, the financial market is Ghana is still in its developing stages and to some extent inefficient thus information is not equally available to all. Another plausible explanation for such results could be the level of financial literacy of investors in Ghana. According to the World Bank (2019), about 52% of

the Ghanaian population are financial illiterates. To make the most of investment choices, investors need to be aware of the biases that have an impact on their decisions.

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APPENDIXES

1. Questionnaire

Investment in Mutual Funds

Dear Participant, my name is Hannah Adjowa Forson and I am a student at Ashesi University College. For my undergraduate thesis, I am examining the patterns of investment decisions of individual investors in Ghana.
I humbly invite you to participate in this research study by completing the attached surveys.The following questionnaire will require approximately 5 minutes to complete. There is no compensation for responding nor is there any known risk however your participation in this survey will help individual investors in Ghana become conscious of some behavioural biases that come to play when making investment decisions.
Participation is voluntary and you may refuse to participate at any time. Information collected will be stored in a database and will not be shared with any third party.
Thank you for taking the time to assist me in my educational endeavour.

For any enquiries, please contact the researcher on hannah.forson@ashesi.edu.gh or 0266511187
* Required

Investment in Mutual Funds

1. Do you invest in any mutual fund? *

Mark only one oval.

- ◯ Yes
- ◯ No

Investment in Mutual Fund

2. Please indicate your age *

Mark only one oval.

- ◯ 18-25 years
- ◯ 26-34 years
- ◯ 35-44 years
- ◯ 45-54 years
- ◯ 55 years and above

3. Please indicate your gender *

Mark only one oval.

- ◯ Male
- ◯ Female

4. Please indicate your highest academic qualification *

Mark only one oval.

- ◯ Basic school
- ◯ Secondary school
- ◯ Diploma
- ◯ Degree
- ◯ Postgraduate diploma
- ◯ MBA/MSc
- ◯ PhD
- ◯ Other: _____

5. Please indicate your highest professional qualification. *

Mark only one oval.

- ◯ ACCA
- ◯ CFA
- ◯ CIA
- ◯ GSE
- ◯ None
- ◯ Other: _____

6. Please indicate your current occupation. *

Mark only one oval.

- ◯ Private sector employee
- ◯ Public sector employee
- ◯ Retired
- ◯ Self-employed
- ◯ Unemployed
- ◯ Student

7. How often do you invest in a financial instrument? *

Mark only one oval.

- ◯ Occasionally
- ◯ Once a year
- ◯ Once a month
- ◯ Once a week
- ◯ Daily

8. How would you describe yourself? *

Mark only one oval.

- ◯ Unwilling to take risks
- ◯ Willing to take modest risks but only after careful consideration and professional advisement
- ◯ Willing to take modest risks after some thought
- ◯ Willing to take substantial risks after careful consideration and professional advisement
- ◯ Someone who embraces risk, perhaps without sufficient consideration

Hypothetical Market

Scenario 1

The following section gives information concerning a hypothetical financial market. Imagine you saved a total amount of GHS 500 and you would like to invest in a portfolio of mutual funds. There are three mutual funds being traded in the mutual fund market. You have to apportion your initial investment of GHS 500 across all the funds in proportions based on your discretion after analysing the information below.

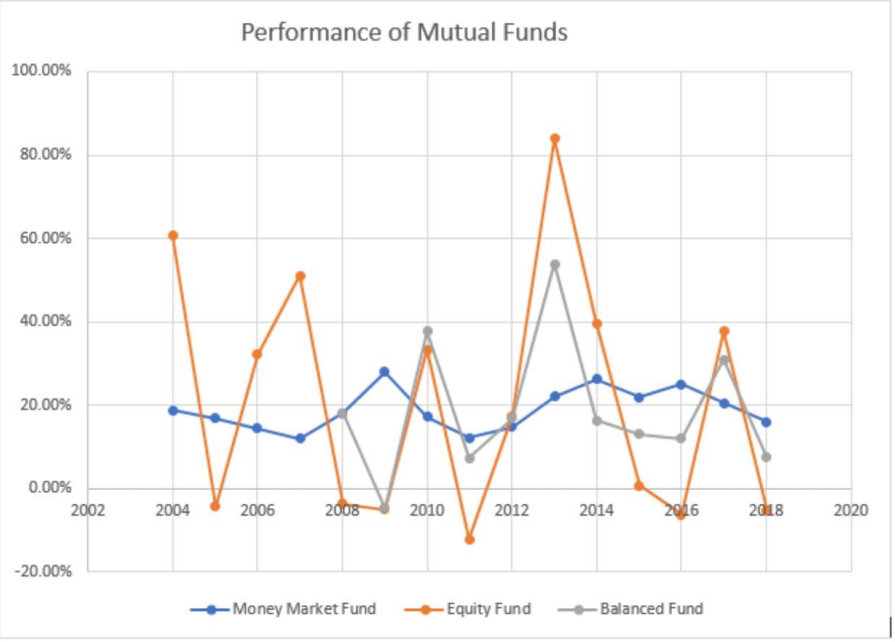
The table below contains current data on the mutual funds traded in the market.

Scenario 1

Mutual Funds	Year to Date (Current Yield)	Investment Allocation	Risk Level
Balanced Fund	5.28%	50% equity 50% fixed income	Medium Risk
Money Market Fund	13.4%	100% fixed income	Low Risk
Equity Fund	-3.5%	70% equity 30% fixed income	High Risk

This chart shows the perfomance of the mutual funds over the past 14 years (2004 - 2018)

Chart of Past Performance of Mutual Funds over the Past 14 Years

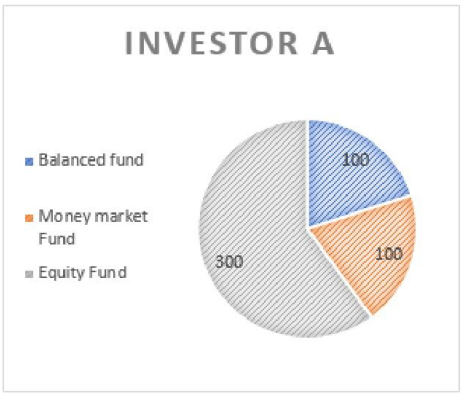


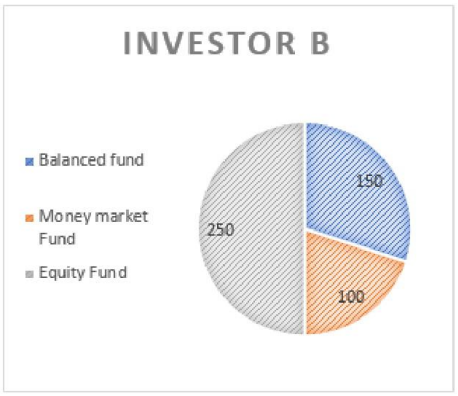
9. 1. Using the following market information concerning the three mutual funds traded on the market, distribute your initial investment of GHS 500 across "each" of the mutual funds. **Please make sure the allocations across all the funds sum up to GHS500. *

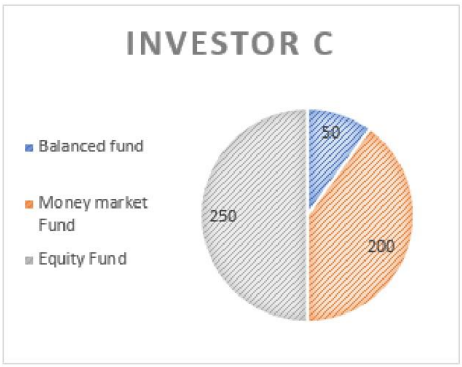
Scenario 2

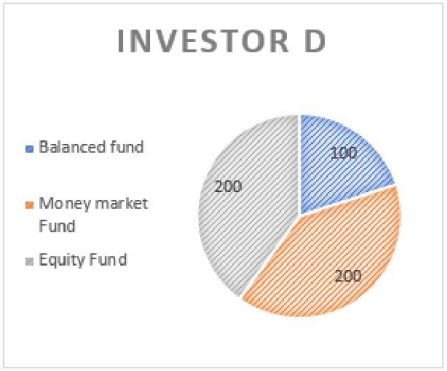
You have been provided with additional social information. The chart belows shows the investment decisions of other investors when presented with the market information in scenario 1.

This shows the investment decision of other investors when presented with the information in scenario 1









10. Given the total information (market and social information) available to you, distribute your GHS 500 across "each" of the mutual funds.**Please make sure the allocations across all the funds sum up to GHS500. *

Section 3

11. Market information is important for your mutual fund investment. *

Mark only one oval.

- ◯ Extremely disagree
- ◯ Highly disagree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Highly agree
- ◯ Extremely agree

12. You put the past trends of mutual fund under your consideration for your investment. *

Mark only one oval.

- ◯ Extremely disagree
- ◯ Highly disagree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Highly agree
- ◯ Extremely agree

13. You study about the market fundamentals of underlying mutual funds before making investment decisions. *

Mark only one oval.

- ◯ Extremely disagree
- ◯ Highly disagree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Highly agree
- ◯ Extremely agree

14. Other investors' decisions of choosing mutual funds types have impact on your investment decisions. *

Mark only one oval.

- ◯ Extremely disagree
- ◯ Highly disagree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Highly agree
- ◯ Extremely agree

15. Other investors' decisions of the mutual funds volume have impact on your investment decisions. *

Mark only one oval.

- ◯ Extremely disagree
- ◯ Highly disagree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Highly agree
- ◯ Extremely agree

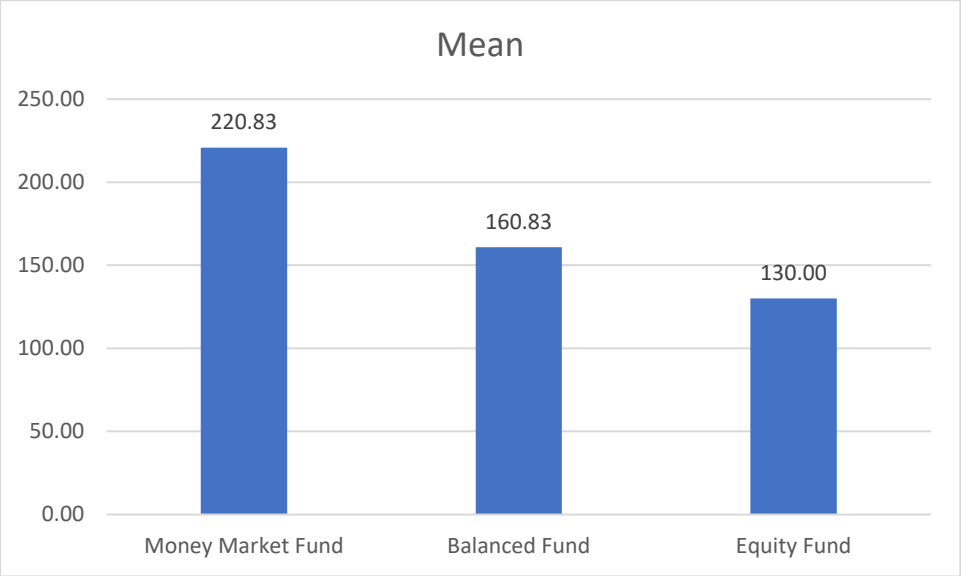
16. You usually react quickly to the changes of other investors' decisions and follow their reactions to the mutual fund market. *

Mark only one oval.

- ◯ Extremely disagree
- ◯ Highly disagree
- ◯ Somewhat disagree
- ◯ Somewhat agree
- ◯ Highly agree
- ◯ Extremely agree

2.Graphical Presentation of Mean Differences

Mean differences of money allocated when given market information



Mean Difference of money allocated when given social information